In previous studies its antioxidant capacity on liver membranes was observed. The objective of this work was to analyze the in vitro antioxidant activity of SM on the peroxidation of microsomes and brain mitochondria of Wistar rats AH / HOK. Ascorbate-Fe^{++} -dependent non-enzymatic peroxidation assays were performed by incubating 1 mg of protein samples in 0.05 M phosphate buffer, pH 7.4 at 37 ° C. Peroxidation was initiated with ascorbate (final concentration 0.4 mM). Controls without ascorbate were used. The light emission for 180 min was quantified as counts per minute (cpm) every 10 min in a Packard 1900 TR, (Meriden, CT, USA) chemiluminescence program. To study the effect of SM, different concentrations of the product were used: 6.25; 12.5; and 25 µg per mg of mitochondrial and microsomal protein. In the peroxidation assays the protection against oxidative damage in both membranes was SM concentration dependent. Inhibition percentages were in microsomes 31.27%, 51.62% and 71.27%, and in mitochondria 27.99%, 52.92% and 63.76% with respect to the control. These results shown that SM may act as an antioxidant protecting rat brain microsomes and mitochondria from oxidative damage.

(433) **PROTEASOME INHIBITORS IMPROVE TREACHER COLLINS SYNDROME (TCS) IN A ZEBRAFISH (*Danio rerio*) MODEL.**

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TCS is a congenital disease characterized by defects in the craniofacial skeleton and absence of mental alterations. We modeled TCS in *D. rerio* embryos through the microinjection of Morpholino oligonucleotides blocking the translation of the ortholog of the causative gene (*TCOF1*). Cnbp, a protein required for proper craniofacial development, was detected in lower levels (without changes in its mRNA expression) in TCS-like embryos. As Cnbp degradation is carried out through the proteasomal pathway, we tested if proteasome inhibitors (MG132 and Bortezomib) were able to ameliorate cranial skeleton malformations in TCS.

Two-cell embryos were injected with control Morpholino (C) or *tcof1* translation blocking Morpholino (TC). At 6 hours post fertilization (hpf) embryos were exposed to MG132 (5 μM), Bortezomib (0.5 μM) or vehicle for 18 hours. Cnbp protein level was measured by western-blot in total extracts from 24 hpf specimens. Cranial cartilages measurements were performed in 4 days post-fertilization larvae stained with Alcian Blue by using the ImageJ software. Embryo viability was not affected by any treatment. Control injected embryos did not show any effect on cranial cartilages induced by MG132, Bortezomib or vehicle and were pooled together as control group (C). In arbitrary units, Meckel length: C:100.0 ±0.7, TC: 89.3±3.1*, TC+Bort: 98.7266±2.0, TC+MG132: 91.5795±2.8, Ceratohyal angle: C: 99.4±1.3, TC: 157.3±14.9*, TC+Bort: 103.0±4.6, TC+MG132: 124.3±10.7, $p<0.05$ vs. C, ANOVA. All the craniofacial parameters measured behaved similarly. The results suggest that both drugs (especially Bortezomib) partially rescued the phenotype. Cnbp protein recovered under both treatments although not to control levels.

Data suggest that proteasome inhibitors improve TCS in the zebrafish model, likely by preventing Cnbp protein proteasome degradation. This finding may have potential therapeutic implications for TCS management.

Keywords: proteasome inhibitors, therapy, zebrafish, mandibulofacial dysostosis

(1474) **SURFACE ULTRASTRUCTURE OF THE SCOLEX AND HISTOCHEMISTRY OF THE GLANDULOMUSCULAR ORGAN IN *Orygmatobothrium schmitti* (CESTODA: PHYLLOBOTHRIIDEA)**

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Cestodes are parasites of the intestinal tract of vertebrates. Attachment organs in the scolex are used to maintain their position on the intestinal wall of their hosts. *Orygmatobothrium schmitti* (Cestoda: Phyllobothriidea) is a parasite of the shark *Mustelus schmitti* (Chondrichthyes). It possesses a scolex with four bothridia, each having an apical sucker, and a central glandulomuscular organ. The objective of the present study was to describe the microtriches, glandulomuscular organ, subtegumental musculature of bothridium, sensory organs ultrastructure and the histochemical composition of the secretion of the glandulomuscular organ of *O. schmitti*. Seventeen scolices were stained with four histochemical techniques: coomassie brilliant blue, periodic acid-Schiff, toluidine blue and sudan black. Five worms were observed with scanning and transmission electron microscopy. The glandulomuscular nature of the central bothridial organ is confirmed and its ultrastructure is described in detail. Also the internal structure of the tegumental microtriches, two types of sensory organs and subtegumental muscular papillae are described for the first time. The glycoproteic nature of the secretion of the glandulomuscular organ and the apocrine mechanism of secretion are determined. All the microtriches on the apical sucker possess a more developed cap than filitriches on the bothridia, the scolex proper and the cephalic peduncle. These specializations of the scolex might be involved in adhesion and abrasion to the intestinal mucosa of the shark. The microtriches with developed caps could be involved in the attachment to the mucosa, whereas those small caps might be related to the absorption of nutrients.

Keywords: Orygmatobothrium schmitti, cestoda, scolex, glandulomuscular organ, ultrastructure.

(1489) **SURFACE ULTRASTRUCTURE AND HISTOCHEMISTRY OF THE SCOLEX GLANDS OF *Clestobothrium cristinae* (CESTODA: BOTHRIOCEPHALIDEA) PARASITE OF *Merluccius hubssi* (TELEOSTEI)**

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Clestobothrium cristinae (Cestoda: Bothriocephalidea) is an intestinal parasite of the hake *Merluccius hubssi* (Teleostei).The scolex of the tapeworms is the principal attachment organ. In *C. cristinae* it possesses an apical disk and two bothria. It is covered with capilliform filitriches and gladiate spinitriches, and possesses tumuli (frontal glands type I) in the proximal bothrial surface. In this study the internal morphology of all these structures and the nature of the secretions of the glands in the scolex are described for the first time in *Clestobothrium*. Ten scolices were stained with several histochemical techniques: coomassie brilliant blue, periodic acid-Schiff and toluidine blue. One worm was analyzed using conventional techniques for transmission electron microscopy. As a result, the internal ultrastructure of the tumuli, and the internal structure of gladiate spinitriches in this genus are described. Groups of cells PAS positive were observed in the same area where the tumuli were described using SEM. It is possible that these groups of gland cells are in fact a constitutive part of the so called tumuli; however, the internal structure is different from the tumuli described in other genera of bothriocephalideans. The secretion is based on mucopolysaccharide, which might indicate they are involved in the adhesion to the intestinal mucosa of the hake.

Keywords: *Clestobothrium cristinae*, cestoda, scolex, *Merluccius hubbsi*, ultrastructure.

NEUROSCIENCE 1

(138) **ADMINISTRATION OF NATIVE PLANTS DECOCCTIONS IN NORMAL AND STREPTOZOTOCIN-INDUCED DIABETIC RATS**

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Diabetes mellitus is a chronic disease that represents a major problem for the countries health systems. Thus the search of new alternative treatments is constant. Numerous studies indicate that 85% of world population still uses “medicinal plants” to treat its health. *Oxalis erythrorhiza* (Oe) and *Tessaria absinthioides* (Ta) are two species that growth in Argentine, in Cuyo region, and are consumed to regulate the glucose (Glu) and cholesterol (Chol) levels, even when their effects lack of scientific support. On the other hand, the liver X receptors (LXRα and LXRβ) are related with the systemic Chol clearance and the Glu metabolism in the hypothalamus (HT). Forty two days old male rats (SD), diabetics (Ed, i.p. STZ 30mg/Kg) or controls (C, i.p. vehicle) received (5 or 10% W/V) decoctions (Dcs) of Oe (EdOe and COe) or Ta (EdTa and CTa), or water (EdW and CW) as drink for 4 weeks. Glu, Chol and triglycerides (TG) were determined on weekly obtained blood samples by colorimetric kits. LXRs expression was evaluated by WB in HT. At the end of the treatment, the Glu level was lower in EdOe and EdTa (both at 10% W/V) compared to DW (36% and 37% respectively; $p<0.05$), but higher than CW (147% and 305% respectively; $p<0.05$). No significant effects were observed in Chol and TG in these groups. However, Ta 5%W/V significant reduced the LXRα expression in EdTa compared to EdW (64%; $p<0.05$) but still was higher than CW. On the other hand, in Ed groups, Oe (10%) and Ta (5% and 10%) reduced LXRβ expression compared to W (20%, 11% and 18% respectively; $p<0.05$), and also the values were higher than CW group. The Dcs did not produce any effect on the parameters evaluated into the C group. Thereby, Oe and Ta could have regulatory effects on Glu and LXRs expression. Therefore, a more extended treatment will be necessary to achive the research objective and to propose these native plants like new therapeutic tools. (PIP 0243, PIO-SECITI 2250, CICITCA UNSJ, CONICET).

Keywords: diabetes mellitus, hypoglycemic, LXR receptor, phytomedicine.

(789) **ALTERATIONS IN VASCULAR INTEGRITY AND NEURONAL FUNCTIONALITY RELATED TO EARLY STAGES OF DIABETIC RETINOPATHY IN A METABOLIC SYNDROME MOUSE MODEL**

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Diabetic retinopathy (DR) is the most serious ocular complication associated with Type 2 Diabetes Mellitus (T2DM), which is a metabolic syndrome (MS), and one of the leading causes of blindness. Thus, we proposed to analyze in a MS mouse model, markers of retinal vascular integrity and neuronal functionality, related to early stages of DR.

We used C57BL/6 (WT) and Apolipoprotein E knockout (ApoE-KO) mice either fed with a normal diet (ND) or a 10% w/v fructose diet (FD) in drinking water from 2 months of age. We demonstrated ApoE-KO after 2 month of FD, presented hypercholesterolemia, hypertriglyceridemia, hyperglycemia and hyperinsulinemia. Here, retinal functionality was assessed by scotopic ERG at 4 month of FD treatment. Extravasation of serum proteins and levels of proteins involved in neuro-glial injury were analyzed by WB. Vascular permeability was evaluated by albumin–Evans blue complex leakage and astrocyte GFAP levels on whole mounts of retina.

The ERG a-wave and the OPs amplitudes were significantly decreased in retinas of ApoE-KO after 4 month of FD vs WT DN ($p<0.05$), correlating with an increase in TUNEL positive cells. Higher vascular permeability was observed in ApoE-KO FD, evidenced by the Evans blue leakage and the albumin and α2-M extravasation. At this early stage of the DR, the GFAP expression levels were observed just in astrocytes but not in Müller glial cells (MC) demonstrating non-reactive gliosis in retinas of ApoE-KO FD, which correlated with the GS expression pointing out a normal function of MC. However, a reduction in GFAP immunoreactivity was observed in ApoE-KO FD whole mounts, which may be linked to a reduced ability to maintain BRB characteristics in ECs.

The results showed that ApoE-KO after 4 months of FD, which represent features of human MS, presented vascular dysfunction and neurodegeneration. Thus, this model could offer the opportunity to investigate DR at an early stage, whose prevalence has increased substantially worldwide.

Keywords: retinopathies, metabolic syndrome, ApoE-KO mice

(270) **CONSUMPTION OF A HIGH FAT DIET IN EARLY STAGES OF LIFE INDUCES COGNITIVE IMPAIRMENT AND HIPPOCAMPAL CHANGES IN C57BL/6 MICE.**

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Insulin resistance and obesity associated with the consumption of hyperlipidic diets are considered risk factors for the development of cognitive disorders and neurodegenerative diseases such as Alzheimer’s disease. Insulin resistance, inflammation and cognitive dysfunction are common manifestations in the context of both neurodegenerative and metabolic pathologies. Our objective is to study the effect of juvenile exposure to a moderately high fat diet (HFD), since weaning until 2 months of age, on cognitive performance and hippocampal glial and neuronal changes in C57BL/6 mice. HFD exposure induced an increase in blood glucose and peripheral inflammation shown by significantly augmented levels of seric IL1β ($p<0.05$), without changes in body weight. HFD mice showed alterations in spatial memory evidenced by the impaired performance in the novel object localization recognition test, a hippocampus-dependent task (Discrimination index= CD 33.89% vs HFD 14.11%, $p<0.01$). No significant differences were detected between groups in the elevated plus maze, a test employed to evaluate emotional behavior. Immunohistochemistry for Iba1 microglial marker allowed the analysis of morphologic alterations induced by HFD exposure. We found an enlargement in the soma size of Iba1+ cells ($p<0.01$) in response to HFD, evidencing a marked activation of this brain immune cell population. In consonance with the neuroinflammatory context and spatial memory deficits observed upon HFD, analysis of adult neurogenesis is now in progress, assessing the number and morphology of doublecortin + immature neurons in the dentate gyrus of the hippocampus. Our results indicate that juvenile consumption of a hyperlipidic diet promotes metabolic and inflammatory alterations that are associated with cognitive impairment and glial activation in the hippocampus, changes that could lead to neurological deficits in adulthood as well as in the development of neurodegenerative diseases.

Keywords: high fat diet, hippocampal neuroinflammation, cognitive impairment

(571) **INFLUENCE OF CHRONIC MILD STRESS IN METABOLIC AND BEHAVIOURAL ALTERATIONS INDUCED BY A HIGH FAT DIET. INVOLVEMENT OF NEUROTROPHINS AND CYTOKINES**

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Nowadays obesity has become a worldwide disease affecting millions of people. Clinical studies have shown an association between cognitive impairment and obesity, marking it as a risk factor for dementia development, such as Alzheimer’s disease. In a previous study we’ve gathered evidence showing that in C57BL/6J mice, a high fat diet (HFD) decreases learning and memory capacity, and desregulates sugar metabolism. Chronic Mild Stress (CMS) enhanced the metabolic desregulation while causing anxious-like behaviour.The objective of this study is to analize the role of neurotrophin and cytokines expression in behavioural alterations and their potential use as conductual disfunction markers. For this purpose